

# Evaluation Report No. 2

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# 1. Executive Summary

The National Prescribing Service (NPS) evaluation plan and its execution to date have been positively received by experts and key stakeholders. To this point in time, the only real concerns which have arisen in the conduct of the evaluation have been time delays experienced in obtaining essential Pharmaceutical Benefits Scheme (PBS) data on prescribing from the Health Insurance Commission (HIC); and the 'cessation' of the Pharmacy Guild survey data collection which has been used by the Drug Utilisation Sub-Committee (DUSC) to supplement PBS figures on prescribing and provide an overall estimate of medicine use in the community. The loss of DUSC data, or at least of its 'continuity' in current form, is significant to the NPS evaluation and to all who are concerned with monitoring medicine use, particularly in an area where data to monitor trends and intervention effect are already severely limited.

As the evaluation progresses, it is clear that obtaining data to enable the implementation of interventions to be monitored (their nature and intensity) is just as important as obtaining data on effect. It will be vital, to enable sensible and meaningful interpretation of changes in prescribing, to know the level and type of intervention which may have been responsible for effecting that change. In this report, the basic level of information being collected on the implementation of both national and local Divisional-level activities and participation is illustrated for the case of antibiotics (for Upper Respiratory Tract Infection (URTI)). In fact, more detailed information is also being collected from facilitators on the nature of the activities they are implementing within Divisions, and will also be available for future analysis.

There will doubtless be continuing methodological challenges for the NPS evaluation to overcome. Multiple, innovative methods are required and are being utilised and/or developed to help identify the nature and extent of the change effected by NPS. The Divisional case study methodology recently trialed and described briefly in this report is a good example of the development of the NPS evaluation methodology. The case studies have had several positive outcomes: not only have they proven to be a rich source of information about what is happening on the ground at the Divisional-level that will be used to guide future program implementation, but they have also provided the starting point for the process of 'modelling' the potential and probable impact of NPS intervention strategies – taking into account general practitioner (GP) and patient characteristics. Undertaking the case study data collection has also been positive with regard to relations with Divisions (and facilitators) and enhancing further their understanding of the NPS, and has prompted further creative thinking regarding other data which might be collected at the Divisional and/or practitioner level on an ongoing basis to inform the NPS evaluation.

The NPS evaluation is also likely to be enhanced by the increasing level of collaboration and 'partnership' evident across the various working groups of the NPS: with all team players becoming increasingly aware of the activities of others and working strategically in unison. An example of this that is likely to evolve further over the coming year is the collaborative effort already commencing across the various working groups/program areas of the NPS with regard to the development, implementation and evaluation of interventions targeting consumers.

In addition to an increasing focus on the evaluation of strategies directed at consumers, the work plan for the NPS evaluation over the next 12 months to 3 years is also envisaged to involve: examining the economic consequences of NPS activity with increasing sophistication, further exploring the boundaries and potential of computerised prescribing databases, and a continuing evolution of the 'case study' methodology towards the development and monitoring of a set of 'core indicators' at Divisional and GP level.

It remains clear that the NPS approach and strategies represent the best chance of making significant nationwide progress towards improved Quality Use of Medicines (QUM) and reduced PBS costs. However, they will require time to come to fruition, and it is hoped that the time required will be available for both effects to be achieved and measured.

With regard to ongoing reporting of the NPS evaluation, recent discussion in the NPS Evaluation Working Group resulted in the suggestion that two different types of evaluation reports might be produced, alternating on a six-monthly basis. At the end of each financial year, a comprehensive overview of evaluation results would be produced, structured around the specific evaluation questions established in the evaluation plan. At the end of each calendar year, a report focusing on one or more 'themes' (for eg, therapeutic topics and/or evaluation methods) would be produced. In this report for instance, we have selected the therapeutic area of antibiotics (for URTI) and the Divisional case studies as the foci for presentation, and also briefly discuss some of the methodological challenges and lessons learnt thus far in the course of the NPS evaluation.

## 2. A Brief Update on the NPS Evaluation

### 2.1. Progress to date

Achievements of the NPS Evaluation Working group to date have included:

- The development of a comprehensive Evaluation Plan, outlining a framework for process, impact and outcome assessment. The document was reviewed by national and local experts in QUM / evaluation (June 2000), and comments incorporated.
- Collection of baseline data in the form of a national GP survey (Oct 99-Feb 2000) and Consumer survey (August 99), each examining a range of knowledge, attitudinal and behavioural variables.
- A stakeholder survey (Nov 99-Mar 2000) - undertaken by telephone interview - in order to determine the reach and perceived acceptability of NPS activity, and to obtain input/suggestions for future directions. A total of 87 interviews were conducted, including representatives of all NPS member organizations; NPS Board members, staff and working group chairs; Directors (CEOs) and facilitators within NPS Divisions; and Commonwealth representatives from the Department of Health and Aged Care, the Pharmaceutical Health and Rational use of Medicines (PHARM) committee and the Australian Pharmaceutical Advisory Council (APAC), and the HIC.
- The conduct of focus groups with key stakeholders (nationally) as the first step in developing and field testing quality prescribing indicators for general practice. The stakeholder groups involved included: GPs, community pharmacists, consumers and representatives of key national organisations.
- The development of a framework for use in monitoring environmental and system variables which may impact on NPS activity and outcomes and/or on which the NPS may exert an influence. The framework is used on a regular basis in meetings of the NPS working groups and Board to review and record significant occurrences / developments.
- Ongoing collection and analysis of activity reports from NPS Divisions of General Practice in order to monitor the extent and nature of local Divisional-level activity occurring.
- Ongoing collaboration with the HIC in order to obtain data for analysis of prescribing trends, and evaluation of possible NPS impact within target therapeutic areas / medicines.
- Ongoing collaboration with the Department of General Practice at the University of Adelaide to explore the potential of computerised prescribing databases as a means of assessing NPS impact on prescribing.
- Production of NPS Evaluation Report No. 1 (June 2000), in which much of this evaluation activity was presented and discussed in detail.

## **2.2.Current work and priorities**

### **2.2.1. Obtaining and analysing HIC data**

As the millennium year draws to a close, the NPS evaluation is gathering momentum. We hope to soon obtain a substantial dataset on PBS prescribing (cost and volume) from the HIC. The data will represent all (subsidised) prescriptions dispensed, at the individual provider level, and will allow us to examine control and intervention group differences in prescribing for NPS programs up to the end of 1999. Time series analyses to test for evidence of NPS impacts on prescribing will be undertaken. We are also awaiting receipt of Medical Benefits Scheme (MBS) data from the HIC, concerning *H.pylori* eradication therapy and some of the clinical tests relating to it (endoscopies, breath tests) and will undertake analysis to examine any evidence of effects of NPS messages on changes in the rates of use of these tests. Analysis of HIC data will be ongoing, with PBS and MBS data to mid 2000 expected in the near future.

### **2.2.2. A Health Economic perspective on NPS activity**

It is important for the evaluation to examine the economic consequences of NPS activity closely and in detail: certainly to provide feedback to the Commonwealth but also simply to inform an evaluation which the NPS would like to be as thorough and useful to the QUM field as possible. To this end, the NPS has recently contracted with KPMG to undertake some economic analysis: focusing on more rigorous demonstration of PBS cost-savings, as well as the cost-benefits of NPS allocation of resources and intervention effort (for eg, the costs and benefits associated with a significant focus on local Divisional-level activity).

More specifically, the KPMG work will address the following:

- Additional analysis on HIC data, incorporating information on concessional / safety net status. This will involve comparison of the NPS control and intervention groups to the end of 99, using PBS and total expenditure (including consumer co-payment) and considering average expenditure per scripts (both PBS and total costs). It will involve some technical work regarding a method to account for concessional mix and safety net mix to adjust the expenditure analysis.
- ‘Modelling’, utilising information from NPS Divisions recently involved in some ‘case study work’ (reported later in this report), to examine GP and patient characteristics and the possible / probable impact of NPS interventions. If time allows, work will also be undertaken to generalise the model/s developed to make them ‘user-friendly’, and hence more readily applicable by the NPS in future evaluation.

### **2.2.3. GP surveys**

The second national GP survey (mailout) is currently nearing completion, and is being implemented for the NPS by the Department of General Practice at the University of Adelaide. The survey will provide data on key areas of GP knowledge, attitudes and behaviour, and allow comparison with the baseline GP survey undertaken in 1999.

### **2.2.4. Consumer surveys**

The second national Consumer survey (telephone) was undertaken recently for the NPS by Campbell Research and Consulting, and a report has been provided. The survey provides data on key areas of consumer knowledge, attitudes and behaviour, with a particular focus on the use of antibiotics for coughs/colds/sore throats, and the report compares the findings with the baseline consumer survey undertaken in 1999.

Comparison with the baseline survey demonstrates few significant changes, as might be expected given that consumers have not as yet been a major (direct) target of NPS activity. However, there were some indications of change which will be interesting to continue monitoring in future surveys, for example: increased rates of visits to community pharmacists; increased reporting of cough/cold/sore throat symptoms and concomitant increase in the use of over the counter (OTC) medications for these conditions; and greater acknowledgement of the disadvantages of antibiotic use for these conditions (as opposed to advantages). Anecdotal reports suggest that winter this year represented a particularly severe 'URTI season', which if true, may account for some of the increased symptom reporting and OTC use.

### **2.2.5. Divisional case studies**

Implementation of NPS activity at a local Divisional-level, through the 'contracting' of Divisions and their subsequent employment of 'NPS facilitators', consumes a significant portion of NPS funding and energy. It is important for the evaluation ultimately to answer questions about the 'value for money' spent in this way. It is also important to gain an understanding of how local programs are implemented within Divisions – the models used and the factors which facilitate and hinder progress. In order to address this latter need, in-depth face-to-face interviews with facilitators and key Divisional staff have been undertaken in six 'case study' Divisions across the country, and also with the Drug and Therapeutic Information Service (DATIS) and the Queensland Rural Medical Support Agency (QRMSA). We hope that the rich qualitative data collected will help the NPS understand what's happening 'on the ground' and enable us to further facilitate Divisions, DATIS and QRMSA in effective delivery of the NPS program. A brief description of the case study methodology and outline of key findings are presented in this report.

## 2.3. Directions for 2001

We envisage that 2001 will be another substantial year for the NPS Evaluation Working Group, with some of the main areas of work being as follows:

- Exploring hospital morbidity data for possible effects of NPS messages around Non-Steroidal Anti Inflammatory Drug (NSAID) use on admissions for gastrointestinal ulcer, as well as ongoing collection and analysis of HIC prescribing data
- Continuing to explore the economic consequences of NPS activity, and to undertake Divisional case studies – perhaps involving one or two Divisions at six monthly intervals
- Pursuing outcomes from the exploratory work which has been progressing with computerised prescribing datasets, in conjunction with the Department of General Practice at the University of Adelaide
- Developing new evaluation questions and methodologies in response to the progressive expansion of NPS activity to include a greater focus on the broader spectrum of key stakeholders in the prescribing process – incorporating consumers, pharmacists and specialists
- Implementing ‘opportunistic’ evaluation of the education/prescribing curriculum arm of NPS activity, as the various interactive web-based modules are implemented within Australian medical schools
- And finally, in order for the work being undertaken by the NPS Evaluation Working Group to maximally contribute to the QUM field and to enhance the profile of the NPS, a concerted effort will be made to have relevant papers published in quality peer-reviewed journals.

## **3. Therapeutic Area – Antibiotics for URTI (and bronchitis)**

### **3.1. Why is this a target of NPS activity?**

#### **3.1.1. The problem with antibiotic use in general**

Prior to 1994, antibiotic use in Australia was higher than most other developed countries (1). Despite a decline in recent years, with community antibiotic use (not including hospital use) falling from 26.5 million prescriptions in 1993/94 to 23.3 million prescriptions in 1998/99, anti-infectives remain the third most commonly prescribed group of drugs in Australia (2). 'Consumer' surveys undertaken among the general community for the NPS by Campbell Research and Consulting this year and last, indicated that 11% of the population had used an antibiotic in July '99; and 10% in July 2000. There is concern that much of this use is unnecessary – adding considerably to the costs of medication use borne by the community and individuals, and contributing to the 'antibiotic burden' and the development of resistance globally.

Overuse of antibiotics, both among humans and animals, is acknowledged to be a significant contributor to the global problem of antibacterial resistance (3). Microbial resistance to antibiotics is increasing at a faster rate than science is discovering new drugs. A number of national and international bodies, including the World Health Organisation (WHO) (3), European Union (4), U.S. Centre for Disease Control (CDC) (5), UK Standing Medical Advisory Committee Sub-Group on Antimicrobial Resistance (6) and the Joint Expert Technical Advisory Committee on Antibiotic Resistance (JETACAR) (7) (established by the Australian Commonwealth Department of Health and Aged Care), have outlined strategies to combat this problem. They consistently include the implementation of a range of educational and informational measures targeting policy-makers, prescribers and the public in order to reduce misuse and overuse of antibiotics.

#### **3.1.2. The problem with antibiotics and URTIs**

URTIs are common: ranking second behind hypertension as among the most commonly managed problems in general practice. When only 'new problems' are considered (approximately 44% of the problems managed in general practice consultations), URTIs are the most common problems managed, representing approximately 20% of all new problems seen. (8)

The most recent 'consumer' survey undertaken for the NPS by Campbell Research and Consulting found that in July 2000, 41% of the population reported having had a 'cough, cold or sore throat' and 13% reported having the flu (although they may not actually have been diagnosed with influenza). These figures indicate that many in the general community are experiencing symptoms likely to indicate the presence of an URTI, which are in the main likely to be viral in origin and hence may consequently be treated with antibiotics inappropriately.

The level of antibiotic prescribing for URTIs is inappropriately high. Data from the Bettering the Evaluation And Care of Health (BEACH) study indicate that an antibiotic was prescribed in approximately half of encounters where the presenting reason was URTI problems (excluding bronchitis) (8). More than half of the encounters were for conditions in fact primarily due to viral infection, where antibiotics provide no benefit (ie common cold, acute rhinitis, pharyngitis, laryngitis). Recent systematic reviews have indicated convincingly and quantitatively that even for common upper respiratory tract conditions which do arise from a bacterial infection (such as acute otitis media, sore throat and sinusitis), antibiotics have a limited role to play in treatment (9-13).

The most recent NPS ‘consumer’ survey (Campbell Research and Consulting) similarly indicates an inappropriately high level of antibiotic prescribing for symptoms which may (or may not!) be consistent with URTIs. In July 2000, 22% of those people who reported having had cough, cold or other flu-like symptoms took action which included visiting a doctor. Of those who went to a doctor, nearly half (46%) reported being prescribed an antibiotic for their cough, cold or flu-like symptoms. This finding is confirmed by the results of the NPS clinical audits undertaken for GPs nationally.

The selection of particular antibiotic agents is also often inappropriate. Data collected in the TREND study indicated that 30% of prescribing by GPs for URTI/pharyngitis was for less appropriate antibiotics (14). Data arising from the BEACH study in general practice indicates that amoxycillin remains the most frequently prescribed drug for acute otitis media and acute sinusitis when antibiotic therapy is required, and is the most common antibiotic prescribed for URTIs by GPs. However, newer agents that offer no advantage over first-line agents nevertheless account for a sizeable proportion of antibiotic prescribing for URTIs. Cephalexin for instance is prescribed for 5% of URTIs, and yet is not effective against *H.influenzae* and so has no role in the treatment of these conditions (8). Costs for the patient of newer antibiotics are also likely to be higher (eg cefuroxime, clarithromycin).

### **3.1.3. The opportunity to build on a history of intervention activity**

Concerns about the inappropriate use of antibiotics have been voiced within Australia for many years. The first edition of Antibiotic Guidelines was produced over twenty years ago in response to such concerns, and the publication is now in its 11<sup>th</sup> edition (15). While production and distribution of guidelines alone does little to change prescribing behaviour (16), when used together with activities such as drug audits, prescriber feedback and specific educational campaigns, prescribing has been shown to improve (17-20).

More recently, strategies have been implemented under the broader coordinating umbrella of the national QUM policy and the PHARM committee. These have included National Medicines Week, support for an electronic version of Antibiotic Guidelines, and a large number of grass roots projects involving hospitals, GPs and consumers. Other strategies have included restrictions and warnings by the Pharmaceutical Benefits Advisory Committee (PBAC) concerning flucloxacillin and co-trimoxazole (including the provision of adverse effects information and feedback to ‘high’ prescribers) and audits of restricted medicines by the HIC, notably amoxycillin/clavulanate. While the

latter decreased use of the targeted drug, it has also been suggested however that there may have been some shift in prescribing to other antibiotics similarly over-prescribed (21). A further initiative has been the establishment of the National Antibiotic Resistance Surveillance Program, collecting data from 29 laboratories around Australia to monitor changes in resistance patterns (22).

The reduction in overall antibiotic use achieved in Australia over the last ten years has been a significant achievement. Nevertheless, it has been the view expressed by some that even greater gains may have been made had some limiting factors not been operational in the QUM environment, such as the following (21):

- the structure of the health system increasing the pressure to prescribe through having to deal with a large clinical workload or to maintain income
- QUM activities had been spread thinly, with only a small number of activities aimed at prescribers and antibiotic use
- while one-off project funding enabled a number of interventions to be piloted, there had been no commitment to scale up proven activities to the level of national programs
- despite continued escalation of the cost of the PBS, only small amounts of money had been allocated to QUM activities
- insistence upon a market model (where the sustainability of an activity was dependent upon selling services to end-users) had resulted in some excellent initiatives floundering – so that many practitioners had yet to be exposed to QUM activities

Establishment of the NPS was felt to have the potential to overcome some such problems, particularly in terms of implementing proven interventions at a national level and achieving coverage of the great majority of prescribers. The aim of the NPS is to continue to reinforce the messages regarding antibiotic use and keep prescribing trends moving in the desired direction through a ‘sustainable’ program of activity and change. Other new initiatives, such as Practice Incentive Payments (PIP) to general practices for the participation of GPs in activities designed to enhance the quality of prescribing, have been implemented to help alleviate some of the structural / health system barriers. Another recent development has been the Commonwealth’s establishment of an expert advisory group on antibiotics (EAGA), in response to the JETACAR report (under the auspices of the NH&MRC and the JETACAR group).

### **3.1.4. The existence of good evidence to guide practice**

A number of recent reviews and meta-analyses provide a sound basis for guiding prescribing recommendations such as those made within the Antibiotic Guidelines (14). With regard to antibiotic treatment for specific URTIs, the following publications are among those that have underpinned recent NPS messages:

- sore throat, a Cochrane review authored by Del Mar et al (98) (13)
- sinusitis, meta-analyses by de Bock et al (97) (11) and de Ferranti et al (98) (12)
- otitis media, a Cochrane review authored by Glasziou PP et al (98) (9), and meta-analyses by Del Mar et al (97) (10), Rosenfeld et al (94) (23) and Kozyrskyji et al (98) (24)
- acute bronchitis, a Cochrane review authored by Becker et al (98) (25), a meta-analysis by Smucny et al (98) (26), and reviews by Orr et al (93) (27) and Fahey et al (98) (28).

### **3.1.5. Knowledge of the factors influencing inappropriate antibiotic use and a need for a multi-dimensional systems approach to intervention**

A significant body of evidence has accrued concerning the factors which maintain behaviours relating to medication prescribing and use, and those which are barriers to changing behaviour – both for medicines generally and also for antibiotics specifically. The factors are complex, and include a range of behavioural, social and political determinants. All of the players involved in the process of prescribing and using medicines – health professionals, consumers, the pharmaceutical industry and government – influence the outcome with regard to ‘quality use’, and represent appropriate ‘targets’ for behaviour change strategies.

Given the complex interplay of factors involved, it is not perhaps surprising that regulation, the mainstay for controlling the efficacy, safety and quality of medicinal drugs available in Australia, is not sufficient on its own to improve the quality use of medicines. Indeed, the many interventions to change prescribing practice which include only a single strategy have been shown to be less likely to effect change than those incorporating multiple approaches (29). Australia’s policy on QUM (30) has been designed around a framework which explicitly recognises the influence and roles of all major players in influencing QUM outcomes. It also recognises the ‘stages of learning’ which need to be appropriately targeted by intervention, including awareness, knowledge and skills, and actual practice. The policy asserts that a multi-strategic systems approach is necessary to enabled sustained improvements in QUM.

With regard to the prescribing and use of antibiotics specifically, factors known to influence QUM outcomes and which therefore might be appropriately targeted by multi-strategic interventions include:

*the knowledge base of health practitioners with regard to:*

- accurately diagnosing a condition and identifying it as one for which an antibiotic is (or is not) an appropriate treatment option; and selecting the most appropriate antibiotic to then prescribe
- having an accurate understanding of patients' knowledge, beliefs and expectations concerning the prescription and use of antibiotics

*the knowledge, beliefs and expectations of patients*

- concerning the prescription and use of antibiotics

*the skill and confidence levels of health practitioners*

- in dealing with pressures from peers, patients, the pharmaceutical industry and health care system which may run directly counter to the achievement of QUM outcomes

*awareness by both health practitioners and patients of the consequences of inappropriate antibiotic use*

- the development of resistant microorganisms and resultant health implications for individuals and communities
- economic costs for individuals and the community

*aspects of the health care system, such as:*

- time and financial pressures on health practitioners
- the availability and cost of antibiotics to patients

### **3.1.6. Evidence of effective intervention strategies**

The literature does provide evidence, both for prescribing generally and antibiotic prescribing in particular, of intervention strategies which have the potential to be effective when implemented by the NPS in a sustained fashion at a national level.

With regard to prescribing generally, review studies have concluded mailed educational materials alone to be generally ineffective; educational outreach approaches and ongoing feedback to be generally effective; and that there has been insufficient evidence to determine the effectiveness of reminder systems and group education (29). Mailed feedback alone has been found not to change prescribing (31), whereas feedback which includes specific recommendations is more likely to change behaviour than general feedback on current behaviour (32). As mentioned above, multi-faceted interventions are more likely to be successful than single interventions (33). In a review of six studies examining the effect of feeding back cost information to GPs, significant increases in generic prescribing, reduced prescribing costs and test ordering were observed (Beilby et al 96) (34).

With regard to promoting the judicious use of antibiotics specifically, Belongia & Schwartz (35) have recently provided a useful summary of strategies likely to be

effective in changing provider behaviour. These include: evidence-based recommendations / guidelines, with a recent review suggesting that locally-developed guidelines may be more likely to be accepted and followed than those developed nationally without local input or recognition of local needs (36). Supporting clinical practice guidelines with other educational activities, such as Continuing Medical Education (CME) seminars and distribution of printed materials, may enhance their adoption if actively promoted to clinicians and endorsed by opinion leaders in the community. Another potentially effective strategy is individual or small group peer education (37-40): particularly effective when presented or endorsed by local opinion leaders and relevant to the doctor's own practice; and when due importance is given to establishing credibility, defining clear objectives for behaviour change, repeating and reinforcing key messages, and providing clinicians with the opportunity to voice their own concerns and provide feedback.

Providing feedback to clinicians regarding their own antibiotic prescribing practices has also been a successful technique for behaviour change (41), although there is a particular need to be mindful that inappropriate therapeutic shift does not result. Feedback can entail comparisons with peers or with a standard or indicator, and is thought likely to be most effective when the system is developed with local input, where clinicians accept the measures as important, fair, and relevant to their own practices. Finally, the use of computer-assisted decision support has been used to successfully improve antibiotic prescribing in hospitals, and may also do so in outpatient settings (42).

### **3.1.7. Support from all QUM / NPS stakeholders**

A final and important reason contributing to the decision of the NPS to target antibiotics (for URTI) was the strong support for doing so that emerged during the consultation process preceding the establishment of the NPS. Support for the need to intervene with regard to antibiotic use has continued to be demonstrated in the surveys of key stakeholder groups undertaken as part of the NPS process evaluation.

## **3.2. NPS activities and messages targeting antibiotic use for URTI**

Multi-strategic activities have been implemented in both 1999 and 2000, with careful thought given by the Prescribing Working Group of the NPS to the development of 'key messages' which are meaningful, evidence-based, simple and understandable. Tables 1 and 2 describe the activities, target groups and key messages for the antibiotic programs implemented in 1999 and 2000 respectively.

**Table 1: NPS National Antibiotic Activities and Messages for 1999**

<b>Date</b>	<b>Activity</b>	<b>Target Group</b>
April 99	PPR with feedback	GPs
April 99	NPS News	GPs
April 99	Case study (2)	GPs
May 99 - October 99	Clinical Audit	GPs
June 99	Community Messages	Consumers

1999	Patient material	Consumers via GPs
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**Key messages**

- National overuse
- Address patients expectations for antibiotics
- Antibiotics have a limited role in URTIs: use only when a benefit can be expected
- Amoxicillin remains 1st line despite changing resistance patterns
- Amoxicillin/clavulanic acid, cefaclor & cefuroxime have a limited role
- Otitis media: what the meta-analysis means

**Table 2: NPS National Antibiotic Activities and Messages for 2000**

Date	Activity	Target Group
2000	Patient material	Consumers via GPs
Feb 00-Nov 00	Clinical Audit	GPs
Aug 00	PPR with feedback	GPs/OMPs
Jun 00	NPS News	GPs/OHP
Jun 00	Case study (PH2)	Pharmacists
Ongoing	Clinical audit (Medical Director)	GPs
	Pharmacists letter	Community pharmacists
	Community messages	Consumers

**Key messages**

- Review your prescribing of antibiotics
- Only use an antibiotic for the treatment of URTI if a benefit can be expected
- Antibiotics have no role in the treatment of viral illness and limited role in the treatment of sore throat, uncomplicated URTIs and bronchitis
- Use the narrowest spectrum agent possible
- If an antibiotic is required for an URTI, amoxicillin is currently the drug of choice for most infections despite changing resistance patterns
- Amoxicillin/clavulanic acid, cefaclor and cefuroxime are second line empiric therapy- reserve for situations of patient tolerance/hypersensitivity or poor response to first line therapy
- Educate patients on realistic expectations for antibiotics

### 3.3. Coverage and uptake of strategies

A limitation of all intervention strategies is the extent to which the target group participates, and an important component of the NPS evaluation is monitoring levels of participation in national and local Divisional-level activities. Tables 3 and 4 describe the levels of participation of various target groups in particular antibiotic activities during 1999 and 2000, at a national level and local Divisional level respectively.

**Table 3: NPS National-level Antibiotic Interventions 2000**

2000		
Activity	Target Group	Participation
Patient material	Consumers via GPs	7000 symptomatic management pads
Clinical Audit	GPs	1511 enrolled
PPR with feedback	GPs/OMPs	15862 GPs, 2011 OMPs
NPS News*	GPs	18199
NPS News*	Pharmacists	11704
Case study (PH2)	Pharmacists	29 (79 GPs also participated)
Clinical audit (medical director)	GPs	Ongoing
Community messages	Consumers	Not assessed as yet

\* The NPS news is distributed through the Australian Prescriber journal to 58,881 health professionals. These include the above-mentioned GPs and pharmacists as well as specialists, scientists, dietitians, students and nurses.

**Table 4: NPS Local-level Antibiotic Interventions 1999-2000**

Activity	Target Group	Participation	Divisions involved
Practice visits	GPs	1816	22
Practice visits	Pharmacists	91	5
Clinical Audit	GPs	250	9
Case based meetings	GPs	132	8
Case based meetings	Pharmacists	30	1
Case based meetings	Nurses	7	2
CME activity/seminar	GPs	399	13
CME activity/seminar	Pharmacists	21	5
Community presentation	Consumers	188	2
Guideline development	GPs	135	1

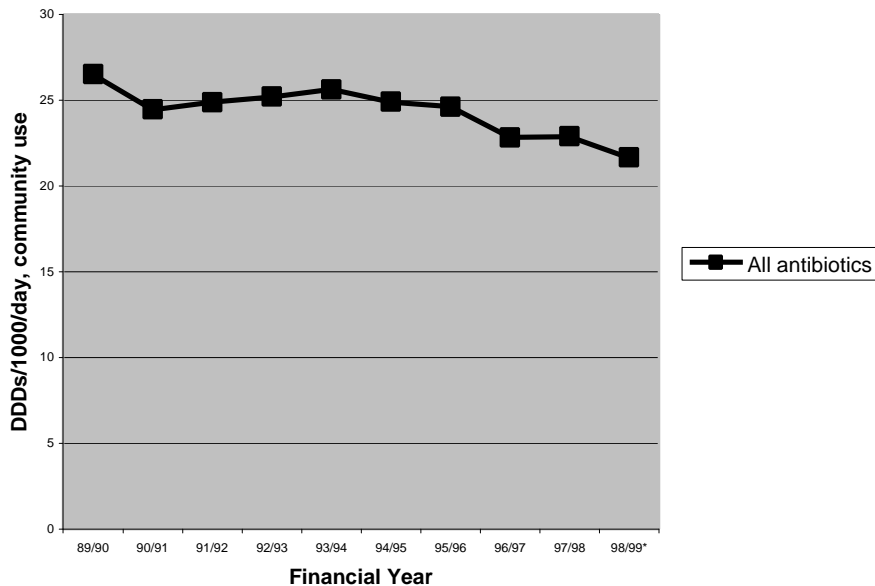
\* There have been other NPS antibiotics activities conducted at a local-level including media releases, pamphlet distribution and promotion of national-level activities, however, these are not included in the above table as they have not been systematically reported by all Divisions.

The NPS antibiotic interventions, at a national and local level, are engaging GPs and other health professionals involved in prescribing in numbers previously unprecedented in the Australian context.

### 3.4. Monitoring for evidence of effect

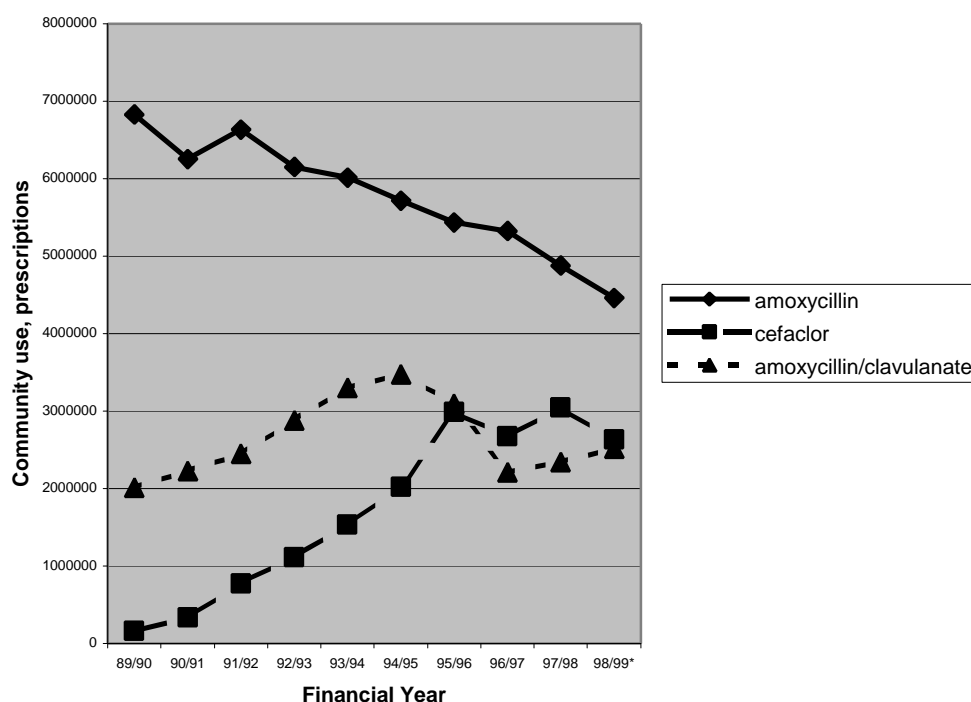
Up to 1999, data on community utilisation of all prescribed medicines (excluding hospital) was collected by DUSC and reported in the annual publication 'Statistics on Medicines' (2). As of this year however, the DUSC data on community utilisation will not be available in the same form, as the Guild survey of pharmacists (which provided information on non-PBS subsidised prescribing) was not undertaken from late 1999. While there has been progress in obtaining similar data from computer software providers it is not clear when this data would be available or what form it would take. Hence, the data required to continue graphing the trends in antibiotic utilisation illustrated in Figures 1 and 2 below will not be available, at least in the short term. This is a significant loss to all who are concerned with monitoring drug utilisation in the community.

**Figure 1 Antibiotic prescribing 89/90 - 98/99**



\* For the month of June 1999, the Guild data collection was incomplete. However, as only three brands of antibiotics were 'missed', there would be negligible effect on overall antibiotic figures for that year.

**Figure 2 Amoxicillin, Amoxicillin/clavulanate & Cefaclor Prescribing 89/90-98/99**



While it is as yet too premature for the NPS to claim credit in having curbed the rising trend of cefaclor, amoxicillin/clavulanate and roxythromycin prescribing, it is hoped that continued data monitoring will demonstrate this to be the case. The NPS would also hope to see increases in the rates of amoxicillin and penicillin V prescribing relative to these other drugs.

Other sources of antibiotic utilisation data which the NPS will continue to pursue in monitoring for evidence of effect will include:

- PBS data on subsidised medicines, in collaboration with the HIC
- Consumer surveys, commissioned by the NPS, assessing knowledge, attitudinal and behavioural variables relating to antibiotic use and other medicines issues. Comparison of the findings of the two surveys undertaken to date (1999 and 2000) indicates no substantive change in antibiotic use - either overall in the last month or specifically in response to the last time cough, cold or flu-like symptoms were experienced. As consumers are yet to be directly targeted by NPS antibiotic activity, the status quo between one year and the next is to be expected.
- GP surveys, commissioned by the NPS, assessing knowledge, attitudinal and behavioural variables relating to a broad range of prescribing issues. With regard to antibiotics specifically, the first GP survey (1999) indicated widespread awareness and reported use of the Antibiotic Guidelines (14). Data from the second GP survey (2000) is currently being analysed, and includes information pertaining to GPs' choice of antibiotic for acute sinusitis.

- It is anticipated that data from the BEACH study of general practice activity, such as already reported in previous sections of this report (for the year Jan-Dec99) - eg the proportion of patients diagnosed with URTIs for whom antibiotics are prescribed; and the relative prescribing of particular antibiotics – will be obtained on an annual basis.
- We expect that indication-specific data from computerised prescribing databases will become available as work that the NPS is undertaking in conjunction with the Department of General Practice at the University of Adelaide progresses.
- Data may be sought from the National Antibiotic Surveillance Program on changing patterns of resistance, particularly if changes in antibiotic prescribing rates become evident.
- The possibility of obtaining data on sales and use of antibiotics from the international market research organisation, Intercontinental Medical Statistics (IMS), also seems promising.
- And finally, the QUM Map website (43) will be monitored for projects relating to antibiotic use: where interventions have been implemented aiming to reduce inappropriate antibiotic use, the outcomes reported will be noted.

## **4. Evaluation Method – Divisional Case Studies**

### **4.1. Aims**

To explore how the implementation of local-level programs is working ‘on the ground’ within Divisions of general practice. In particular, to identify some of the different models being used to deliver the ‘NPS program’, their strengths and weaknesses, and factors which facilitate or act as barriers to implementation. The information will be used to develop strategies to further assist Divisions in their delivery of the NPS program.

### **4.2. Methods**

#### **4.2.1. Design and selection of Divisions**

In order to best explore how the NPS was actually working ‘on the ground’ at the Divisional-level, it was decided to undertake site visits to selected Divisions (and to DATIS and QRMSA) and interview the facilitators, and other key staff members or affiliates as relevant.

Six Divisions were selected from across the country, which were thought to represent different models of implementation with regard to the NPS program, as well as a mix of urban and rural areas and size (in terms of number of GPs), and which had been funded by the NPS for at least nine months.

#### **4.2.2. Interview schedules and data collection**

Some descriptive information about the Division/organisation and staff was collected outside of the interview, by the facilitator (or key organisational contact) completing several ‘tables’ sent prior to the site visit. Semi-structured interview schedules were developed, with some tailoring dependent on the respondent’s position within the Division/organization (and with some additional tailoring for DATIS and QRMSA), but with the same main issues addressed with all respondents. The main question areas were: divisional characteristics and orientation; staffing and infrastructure considerations; context within which NPS and QUM fit; role and activities of the facilitator; NPS activities undertaken and mode of delivery; success of NPS activities; and ‘Is the NPS value for money?’.

In total, 34 interviews were conducted by the case study team (NPS evaluation and research staff), ranging in length from ½ hour to 2 hours and averaging 1 ¼ hours. All interviews were audiotaped as well as notes being taken at the time by a member of the case study team.

### 4.2.3. Qualitative analysis of responses

Responses were subsequently summarised qualitatively by one of the NPS staff members who had been part of the interviewing team in that particular Division/organisation. For each Division/organisation, interviews were summarised with regard to the responses made across all respondents within each of the main question areas addressed. Particular note was made of differences in opinion/response to questions or where there was a particularly high degree of concordance in the responses across all interviewees.

## 4.3. Results

The full results are presented separately in a 'case study report' and are too lengthy to include as part of this document. They were formulated in terms of the particular models adopted by Divisions (or other key Divisional characteristics) and the factors subsequently thought to either facilitate or impede implementation of the NPS program. The 'models' adopted by the six case study Divisions are represented diagrammatically in the Appendix to this report.

Some of the facilitating factors identified include:

- facilitator characteristics (eg previous experience in working with GPs; confident, positive interactional style; resilient personality; pharmacy qualifications)
- reference group and/or program manager support and involvement
- a greater no. of days worked by the facilitator within a week (in NPS program and/or generally within the Division)
- peer support from other facilitators

Some of the impedient factors identified include:

- the general difficulty many Divisions report of 'engaging' with their GPs
- competition with pharmaceutical company events (and other initiatives generally)
- funding enabling employment of a facilitator for only 1 or 2 days/week
- facilitators being unfamiliar with Division environments / working with GPs
- GP perceptions of NPS as 'big brother' (HIC image) – although generally acknowledged to have become less of a concern, particularly where facilitators have had the opportunity to visit and establish a personal relationship with GPs and explain the nature of the NPS face-to-face
- general managerial problems within Divisions (eg changing / absent CEOs)

The results will be available for consideration by the Board and NPS staff, and for the broader group of stakeholders participating in NPS planning days, to provide information about NPS operations and to assist in guiding decisions about future NPS development, particularly with regard to the NPS at the local Divisional-level. It is planned to undertake similar case study exercises, though likely with fewer Divisions, every 6 or 12 months.

## **5. Some of the Methodological Challenges and Lessons Learnt in the NPS Evaluation**

### **5.1. Design issues**

One of the challenges for this evaluation now and into the future is to identify means of measuring the extent of prescribing change attributable to NPS activity in the absence of a Control group (which ceased to exist as of November 1999). Prior to November 1999, GPs within the Control group Divisions had not received the Prescribing Practice Review (PPR) nor accompanying personalised prescribing feedback (nor had the opportunity to participate in NPS activities at the local level through their Division), but had been exposed to a more minimal level of NPS intervention through receipt of the Australian Prescriber and hence the NPS News. It seems likely that brief interrupted time series analysis will be a part of the future methodology adopted.

The potential biases introduced by the non-random selection of the GP Divisions that did constitute the NPS Control group require further investigation. Currently, analysis is being undertaken to assess the 'closeness' with which Control and Intervention group Divisions and GPs were matched.

### **5.2. Limitations in datasets**

The evaluation is reliant on incomplete datasets (eg HIC contains only a record of dispensing of drugs priced above the co-payment level), and datasets which have not been designed to drive and/or be responsive to research agendas. Such limitations introduce biases into datasets for which any subsequent analyses need to be adjusted. For example: PBS data from the HIC may inflate a provider's prescribing rate (relative to others) if he/she has a large number of concessional patients (for whom data collection is more complete), or alternatively may result in the appearance of a lower prescribing rate if the majority of a provider's patients are general patients. The effect will also vary by drug class. Analyses therefore must adjust for the provider's mix of concessional and general patients.

Most of the concerns around medication use relate to inappropriate use (under-use, over-use, inappropriate selection...) for particular conditions. To establish baseline and evaluate change re the 'appropriateness' of use requires accessing data which allow the indication for prescribing to be identified. Datasets such as DUSC and HIC do not allow for prescribing to be assessed in the context of indication. The only avenue for some particular NPS evaluation questions currently is BEACH: also a data set with some limitations and with significant cost associated with data supply. Computerised prescribing also represents a possible future avenue for obtaining indication-specific data and is being explored by the NPS, although there will likely be difficult methodological issues: with regard, for instance, to the specificity and consistency with which indications are 'coded'.

### **5.3. Size and complexity of datasets**

Given the significant size, complexity and ‘non-research design’ of some datasets (eg HIC), significant technical knowledge / experience is required in order to effectively request data – ensuring that specifications are correct and that the data when delivered fulfils the specifications. While the NPS has been fortunate to have such expertise represented on its Evaluation Working Group, the endeavour nevertheless remains time-consuming and difficult.

Similarly, responding to NPS data requests represent large and time-consuming tasks for organisations (such as the HIC) that are required to extract, store and handle data. Considerable technical knowledge and experience is again required: qualities sometimes difficult to maintain in large bureaucracies, which experience frequent staff change.

### **5.4. Confidentiality and privacy issues**

Much of the data that relates to the prescribing and other behaviours of medical practitioners is very sensitive, with access limited by strict ethical guidelines in order to protect the identities and confidences of practitioners and patients. This impacts on the NPS evaluation with regard to, for instance, obtaining PBS and MBS data in a way which enables cross-linkage at the practitioner level; and also with regard to obtaining data when cell sizes are small (eg in small Divisions). Each request to the HIC for data requires that organisation to work through the potential privacy and confidentiality implications, adding again to the time taken to process and fulfil each request.

### **5.5. Computerised medical records**

As mentioned previously, computerised medical records offer the potential to look at medicine prescribing in an ‘indication specific’ manner. However, the time taken to properly explore the possibilities offered is significant, and the challenges to be tackled include: the fact that new methodologies are involved; that the data systems concerned have not been designed to answer rigorous evaluation questions, ethical issues such as the consent of GPs and patients to access data; the ‘naivety’ of many GP users, particularly with regard to the types of decision-frameworks employed in coding protocols; and the politics and negotiation involved in working with relevant software companies.

### **5.6. Pharmacists / specialists /consumers – new questions**

The continued expansion of NPS activity to be more inclusive of pharmacists, specialists and consumers, presents new methodological issues for resolution. Appropriate sources of evaluation data must be identified and/or created, and the limitations inherent must be identified and managed.

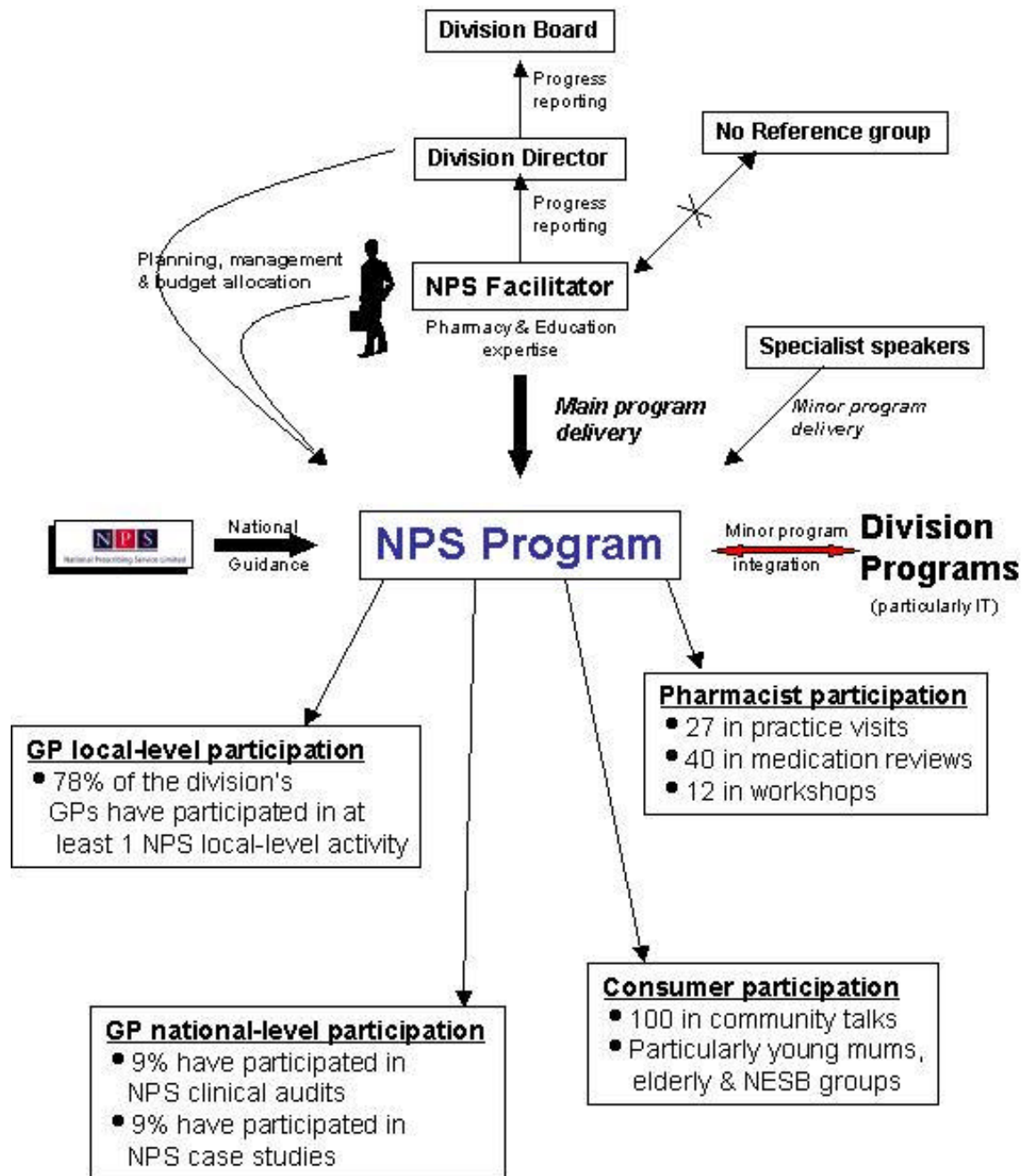
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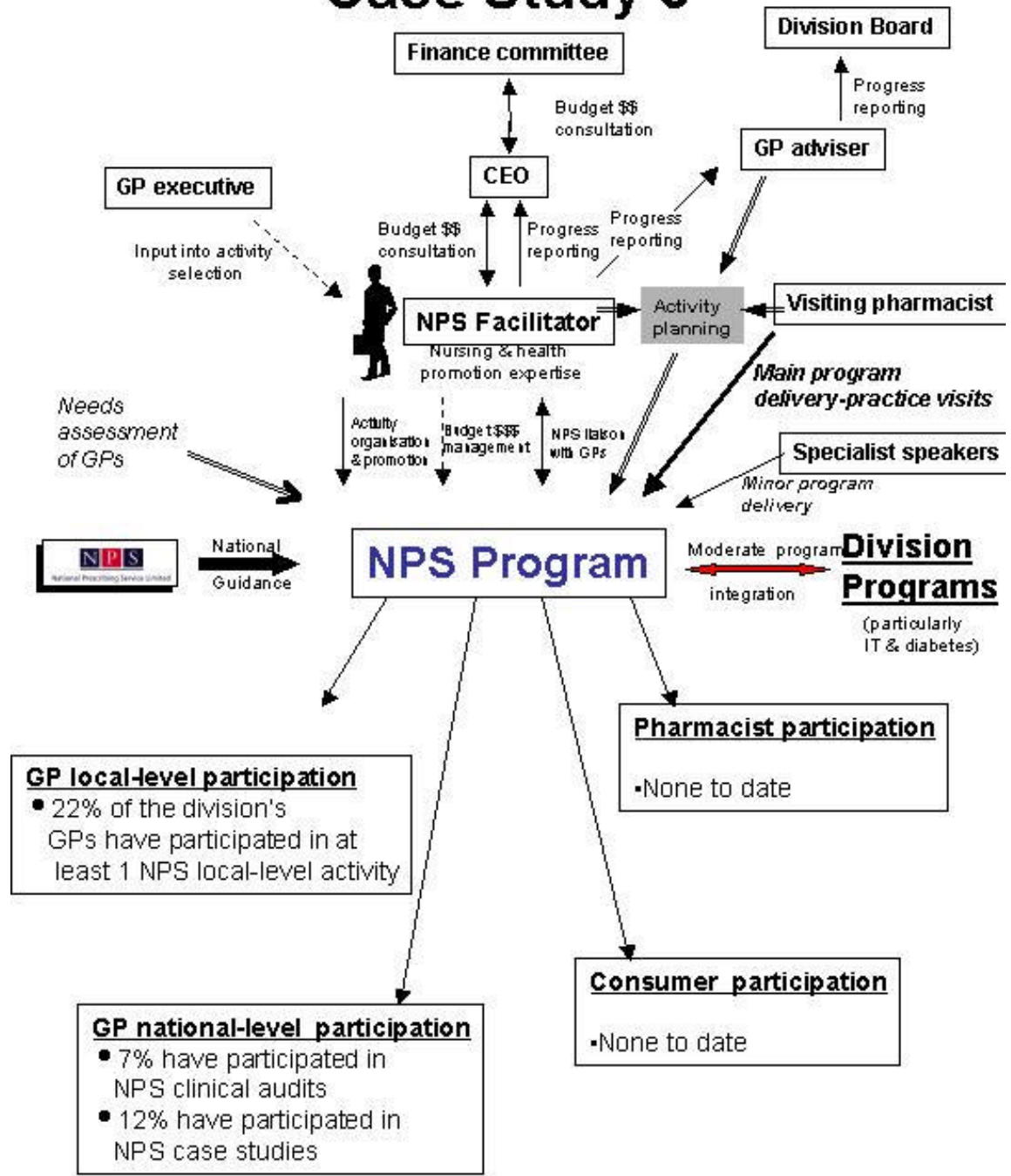
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# Case Study 1

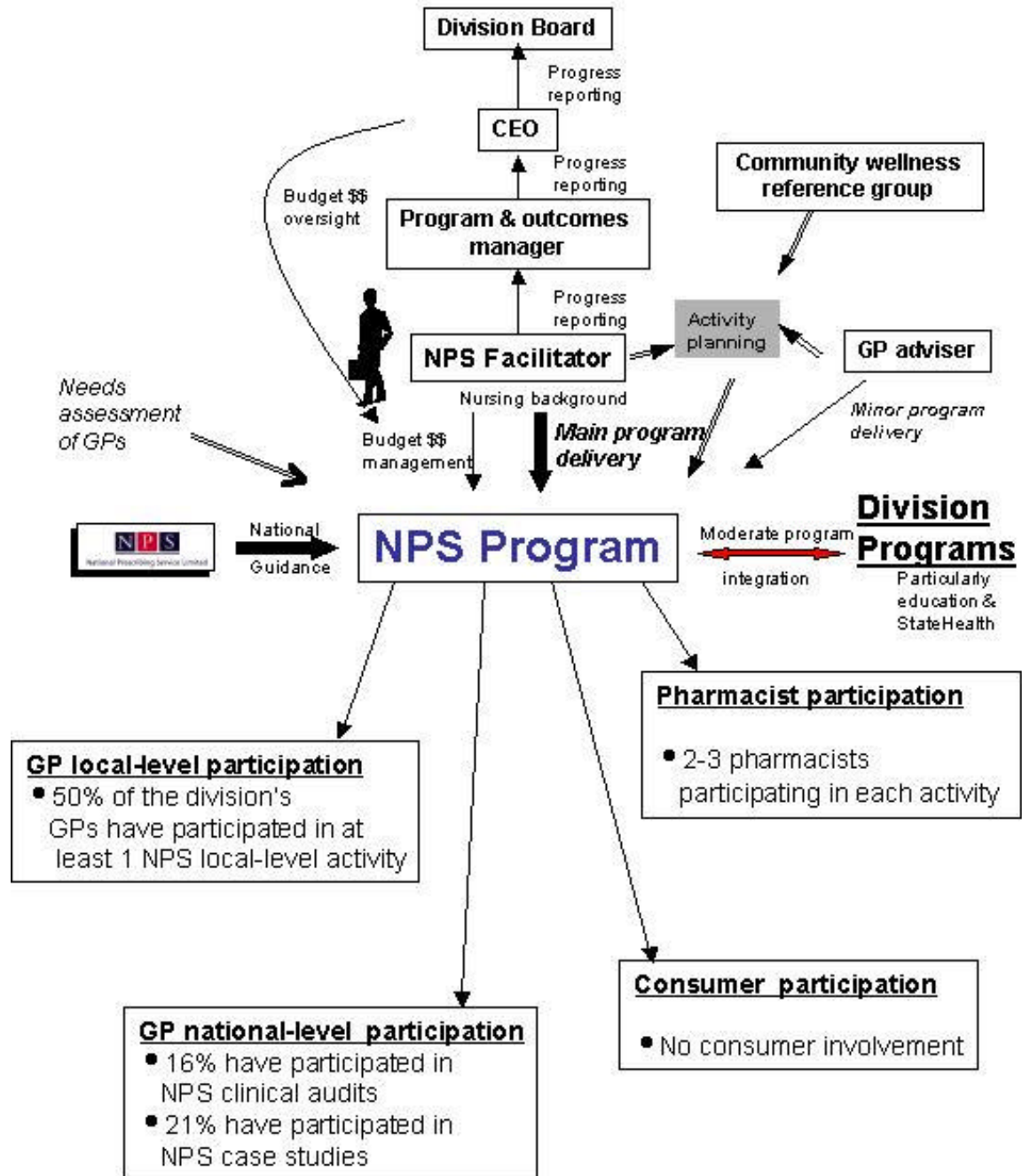




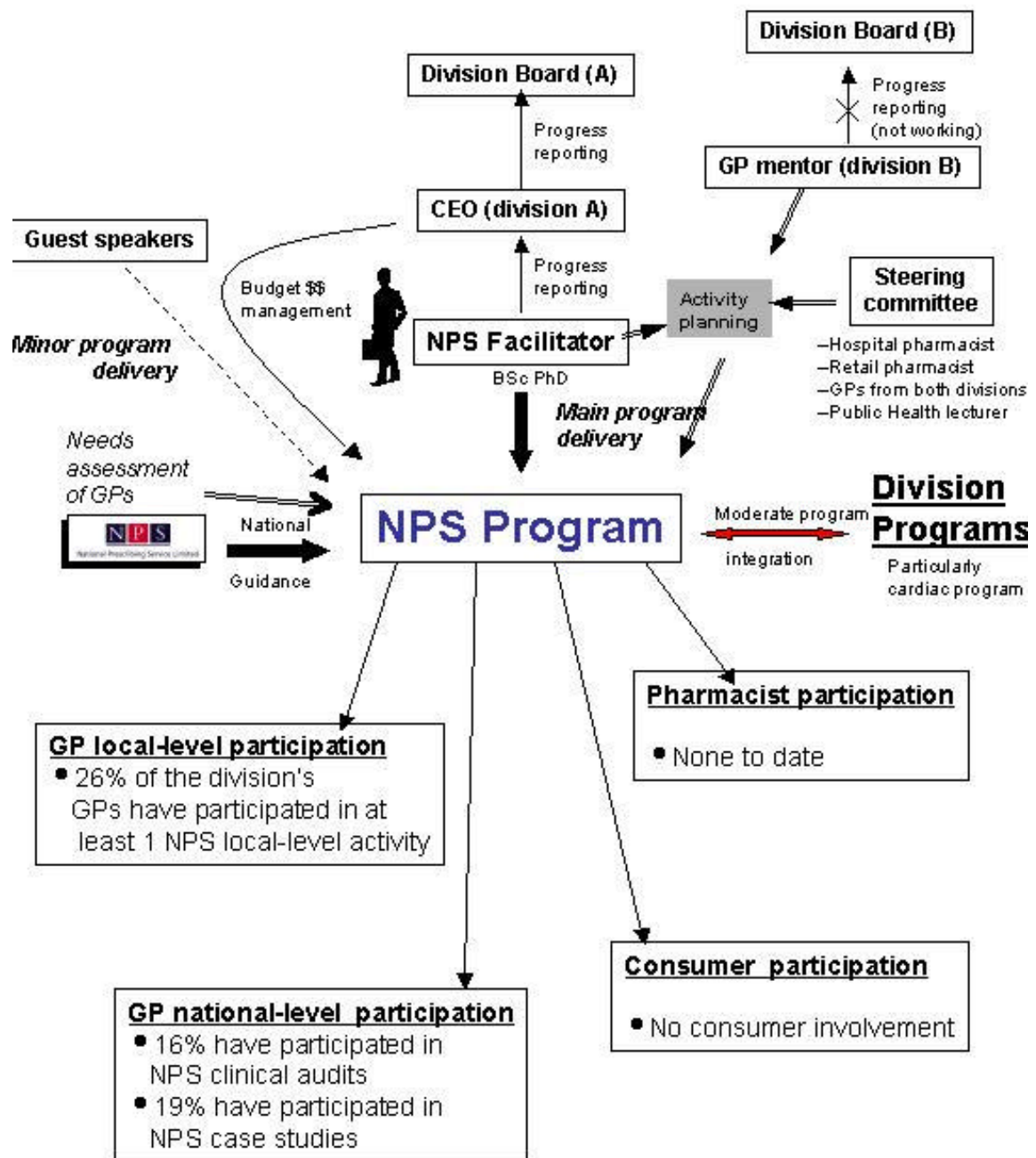
# Case Study 3



# Case Study 4



# Case Study 5



# Case Study 6

